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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/718,559

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EXAMINER

TOOMER, CEPHIA D

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/718,559	<b>Applicant(s)</b> VELAPPAN ET AL.	
	<b>Examiner</b> Cephia D. Toomer	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This Office action is in response to the amendment filed march 10, 2008 in which claim 1 was amended.

The previous rejection of the claims under 35 USC 112, first paragraph is withdrawn in view of the amendment to claim 1.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
3. Claim 1 has been amended to include the limitations "wherein the biodiesel is capable of exhibiting an NOx emission reduction value in the range of 10-55% when used alone without engine modification." Applicant states that this limitation is supported by the Table on page 11.
4. The examiner has reviewed the data in the Table and does not find support for this limitation. Applicant has not explained how he arrived at the claimed range and does not point out wherein in the specification it is disclosed that there is no engine modification.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stidham (US 6,127,560) in view of Srivastava, Appal Energy and Anyang General.

In certain circumstances, references cited to show a universal fact need not be available as prior art before applicant's filing date. In re Wilson, 311 F.2d 266, 135 USPQ 442 (CCPA 1962). Such facts include the characteristics and properties of a material or a scientific truism. Some specific examples in which later publications showing factual evidence can be cited include situations where the facts shown in the reference are evidence or that characteristics of prior art products were known, In re Wilson, 311 F.2d 266, 135 USPQ 442 (CCPA 1962). References which do not qualify as prior art because they postdate the claimed invention may be relied upon to show the level of ordinary skill in the art at or around the time the invention was made. Ex parte Erlich, 22 USPQ 1463 (Bd. Pat. App. & Inter. 1992).

Stidham teaches a method for preparing lower alkyl esters of soybean oil fatty acids by an alcoholysis reaction of the soybean fatty acid triglycerides with a lower alcohol which comprises the successive steps of:

a) comminuting the raw soybeans to crack open their hulls and shatter their kernels;

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- b) heating the comminuted soybeans in a high-temperature reactor to elevated temperatures in the range of 235 to 350.degree. F.;
  - c) maintaining the soybeans at the elevated temperatures for a period of 1 to 60 minutes;
  - d) partially removing the oil contained in the soybeans by mechanical means;
  - e) degumming the crude soybean oil to reduce the concentration of phospholipid in the oil;
  - f) bleaching the degummed soybean oil to further reduce gums and improve color of the oil;
  - g) esterifying the fatty acid glycerides of the soybean oil by an alcoholysis reaction with a lower alcohol in the presence of an alkali catalyst to form fatty acid alcohol esters and glycerine, the conversion of the fatty acid glyceride being in the range of 90 to 99.5%
  - h) separating the glycerine from the crude fatty acid esterification products by settling or other mechanical means;
  - i) washing, in one or more steps, the crude fatty acid esterification products by trickling water through the products and allowing the mix of water and fatty acid esterification products to separate into two phases, washed and purified fatty acid esterification product and a water phase containing water, contaminants such as glycerine and unreacted lower alcohol and impurities from the soybean oil used (see claim 1). The catalyst is sodium hydroxide and the lower alcohol is methanol (see col. 7, lines 31-36).
- Stidham teaches the limitations of the claims other than the differences that are discussed below.

In the first aspect, Stidham differs from the claims in that he does not teach the density and iodine value of the oil. However, Srivastava teaches the soybean oil has a density of 0.91 (Table 7) and an Iodine value of up to 2000 (see page 116, first full paragraph).

In the second aspect, Stidham differs from the claims in that he does not teach all of the process parameters with respect to time and temperature. However, differences in temperature and time will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such parameters are critical.

In the third aspect, Stidham differs from the claims in that he does not specifically teach purification by centrifuging. However, Stidham does teach purification by settling or other mechanical means (see claim 1(h)). This teaching suggests centrifuging.

In the fourth aspect, Stidham differs from the claims in that he does not teach that the purification step involves bubble washing is a conventional method of purifying esterified and Anyang General teaches that bubble washing and the mist washing of Stidham are art recognized equivalents.

It would have been obvious to one of ordinary skill in the art to select bubble washing as the method of purification because Appal teaches it is a conventional method of purification and Anyang teaches that it and mist washing are equivalent for the purpose of purifying esterified oil.

With respect to the size of the bubbles, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the size of the

bubbles through routine experimentation for the best results. As to optimization of the results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima facie* case of obviousness. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

With respect to the biodiesel being capable of exhibiting an NO<sub>x</sub> emission reduction value in the range of 10-55%, when used alone without engine modification, Stidham teaches a method similar to Applicant's method of preparing biodiesel (lower alkyl esters). Therefore, it would be reasonable to expect that the lower alkyl esters of Stidham would reduce NO<sub>x</sub> emissions within the claimed range, absent evidence to the contrary.

3. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stidham in view of Klok (US 5,116,546).

Stidham has been discussed above. Stidham fails to teach purification by microfiltration. However, Klok teaches that the methyl ester of a transesterification process is filtered (see Examples 1 and 2). While Klok is silent with respect to microfiltration, the general teaching of filtration encompasses microfiltration and the skilled artisan recognizes the pore size of the filter that would be required to filter the methyl ester.

5. Applicant's arguments have been fully considered but they are not persuasive.
6. Applicant argues neither Stidham nor Srivastava teaches a method of preparing biodiesel where the biodiesel is capable of reducing NO<sub>x</sub> emissions. Applicant argues that Srivastava teaches away from this concept.

The examiner respectfully disagrees. Applicant has not compared the present biodiesel to that of Stidham and Srivastava is only relied upon for teaching that soybean oil has a density and iodine value within the ranges set forth in the present claims. Stidham teaches a method similar to Applicant's method of preparing biodiesel (lower alkyl esters). Therefore, it would be reasonable to expect that the lower alkyl esters of Stidham would reduce NO<sub>x</sub> emissions, absent evidence to the contrary.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cephia D. Toomer whose telephone number is 571-272-1126. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cephia D. Toomer/  
Primary Examiner  
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